

# AN ANALYSIS ON THE FACTORS WHICH INFLUENCE MOTOR VEHICLE TAX REVENUE WITH PDRB AS MODERATING VARIABLE IN NORTH SUMATERA

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**Abstract:** Motor vehicle tax is one of the Regional Government's tax revenues which are obtained from motor vehicle ownership and/or possession. The revenue of motor vehicle tax cannot be realized since its development is significantly fluctuating. The objective of the research was to find out some factors (population, the number of motor vehicles, consumption, investment, and inflation) which influenced motor vehicle tax which PDRB (Gross Regional Domestic Revenue) as moderating variable. The data were analyzed by using time series (2012-2016) in North Sumatera Province. The result of the research showed that, simultaneously, population, the number of motor vehicles, consumption, investment, and inflation had significant influence on motor vehicle tax. Partially, population, the number of motor vehicles, and investment had positive and significant influence on motor vehicle tax, but consumption and inflation did not. PDRB could not moderate the correlation of population, the number of motor vehicles, consumption, investment, and inflation with motor vehicle tax.

**Keywords:** Motor Vehicle Tax, Population, the Number of Motor Vehicles, Consumption, Investment, Inflation, PDRB

## I. INTRODUCTION

Motor Vehicle Tax (henceforth, **MVT**) is one of the provincial taxes which contributes to regional tax revenues obtained from the ownership and/or the control on motor vehicles. Its retribution is based on Law No. 28/2009 on Regional Tax and Retribution. Tax becomes the obligation for all citizens, and it is forcible, done by the Government according to law.

MVT retribution is collected by UPTD (Technical Implementing Service Unit), Provincial Revenue Service through SAMSAT (One Stop Administration System) which is spread throughout North Sumatera Province which has 70 UPTs (Technical Service Units) of SAMSAT and is expected to be the facility to maximize the potential MVT in order to increase Regional Tax Revenue (henceforth, **MVTR**).

Nevertheless, the data obtained from MVT Units in North Sumatera Province in 2016 indicated that there was no UPT Samsat which achieved the target.

The yearly phenomena on the contribution of MVT per unit in North Sumatera Province in the period of 2003-2016, could be seen in the following Table:

**Table1. Contribution of MVT per Unit in North Sumatera Province in the Period of 2003-2016**

Year	MVT (Rp)	Number of Motor Vehicles (Unit)	Contribution of MVT per Unit (Rp)	Contribution of Development of MVT per Unit (%)
2003	317.961.718.624	1.664.930	190,976.03	0

2004	392.925.761.083	1.957.703	200,707.54	5,09
2005	462.768.823.893	2.285.404	202,488.85	0,88
2006	499.955.253.422	2.555.453	195,642.52	-3,38
2007	557.359.187.958	2.896.912	192,397.69	-1,66
2008	655.450.316.032	3.304.728	198,337.14	3,08
2009	738.202.038.400	3.613.876	204,268.78	2,99
2010	799.444.270.412	4.039.127	197,925.01	-3,10
2011	1.046.727.575.214	4.569.295	229,078.57	15,74
2012	1.211.376.190.415	4.982.417	243,130.23	6,13
2013	1.322.297.249.446	5.315.181	248.777,46	2,32
2014	1.486.962.132.838	5.558.952	267.489,65	7,52
2015	1.492.135.513.686	5.824.720	256.172,92	-4,23
2016	1.595.418.645.760	6.190.076	257.738,13	0,61

From Table 1 above, it was found that the contribution of MVTR per unit in the period of 2003-2016 was fluctuating in its development – it decreased four times (2006, 2007, 2010, and 2015) while the number of motor vehicles increased each year.

Therefore, the writer was interested in studying some factors which influenced MVTR so that she gave the title of this writing, **An Analysis on the Factors which Influence Motor Vehicle Tax Revenue with PDRB as Moderating Variable in North Sumatera.**

### Objectives of the Research

The objective of the research was to find out whether the variables of Population, the Number of Motor Vehicles, Consumption, Investment, and Inflation, simultaneously and partially, had the influence on MVTR in North Sumatera Province and whether Gross Regional Domestic Product (henceforth, **GRDP**) could moderate the correlation of Population, the Number of Motor Vehicles, Consumption, Investment, and Inflation with MVTR in North Sumatera Province.

### Hypothesis

1. Population, the Number of Motor Vehicles, Consumption, Investment, and Inflation simultaneously and partially had the influence on MVTR in North Sumatera Province;
2. GRDP could moderate the correlation of Population, the Number of Motor Vehicles, Consumption, Investment, and Inflation with MVTR in North Sumatera Province.

## II. MATERIALS AND METHOD

The research used associative causal and quantitative method. It was conducted in North Sumatera Province. The data were gathered by using secondary data obtained from written report in the Regional Tax and Retribution Management Agency and the Central Bureau of Statistics of North Sumatera Province. The number of observational data was the number of rupiahs as MVTR in the Regional Tax and Retribution Management Agency of North Sumatera Province in the period of 2012-2016 with monthly data from January, 2012 until December, 2016 with the total of 60 observational data.

The gathered data were analyzed by using multiple linear approaches. Before the hypothesis was tested, classic assumption was tested on the research data because it was the statistical requirement for doing multiple linear regression analysis. In this research, classic assumption tests which would be used were normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. Multiple linear regression equation in this research model could be formulated as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + \epsilon$$

and moderated with moderating analysis model as follows:

$$Z = \alpha + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + \epsilon$$

$$|\epsilon| = \alpha + b_1Y$$

whereas :

Y : Motor Vehicle Tax  
 Z : PDRB  
 $\alpha$  : Constanta  
 $b_1 - b_5$  : Regression coefficient  
 $X_1$  : Population  
 $X_2$  : the Number of Motor Vehicles  
 $X_3$  : Consumption  
 $X_4$  : Investment  
 $X_5$  : Inflation  
 $\epsilon$  : Error  
 $|\epsilon|$  : Absolute error

### III. RESULT AND DISCUSSION

#### Research Hypothesis Testing

##### 1. Determination Coefficient Test ( $R^2$ Test)

Determination coefficient test ( $R^2$ ) was done to measure to what extent the capacity of independent variables (population, the number of motor vehicles, consumption, investment, and inflation) to explain or to predict dependent variable (MVTR). The result of determination coefficient test could be seen in the following Table:

**Tabel 2.**

Model Summary <sup>a</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.792 <sup>a</sup>	.628	.593	9.732.039.578,54219	1,976

a. Predictors: (Constant), INFLASI, JUMLAH\_KENDARAAN\_BERMOTOR, INVESTASI, JUMLAH\_PENDUDUK, KONSUMSI

b. Dependent Variable: PKB

Table 2. above showed the result of determinant coefficient ( $R^2$ ) test which was the Adjusted R Square value of 0.593. It indicated that 59.3% of dependent variable (MVT) could be explained by the variables of population, the number of motor vehicles, consumption, investment, and inflation, while the remaining 40.7% could be explained by the other variables excluded from this research.

##### 2. Simultaneous Significance Test (F-Test)

Simultaneous significance test (F-test) was intended to find out the significance of the influence of independent variables (population, the number of motor vehicles, consumption, investment, and inflation) simultaneously on dependent variable (MVT). The result of simultaneous significance test (F-test) could be seen in the following Table:

**Tabel 3.**

ANOVA <sup>a</sup>					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	8.630.467.359.087.744.000.000.000	5	1.726.093.471.817.548.700.000.000	18,225	,000 <sup>b</sup>
1 Residual	5.114.480.095.348.828.000.000.000	54	94.712.594.358.311.630.000.000		
Total	13.744.947.454.436.572.000.000.000	59			

a. Dependent Variable: PKB

b. Predictors: (Constant), INFLASI, JUMLAH\_KENDARAAN\_BERMOTOR, INVESTASI, JUMLAH\_PENDUDUK, KONSUMSI

The Table above showed that  $F_{\text{count}} = 18.225$  and  $F_{\text{table}}$  value at  $\alpha = 5\%$  with  $n = 60$ .  $K = 6$ ,  $df_1 = k - 1 = 5$ , and  $df_2 = n - k = 54$  was 2.39 which indicated that the value of  $F_{\text{count}} > F_{\text{table}}$ , that was  $18.225 > 2.39$  with the significance level of  $0.000 < 0.05$ . It could be concluded that the variables of population, the number of motor vehicles, consumption, investment, and inflation simultaneously had significant influence on the variable of MVTR.

### 3. Partial Significance Test (t-test)

This test was done to find out significant influence of independent variables (population, the number of motor vehicles, consumption, investment, and inflation) on dependent variable (MVTR) practically or respectively. The result of partial significance test could be seen in the following Table:

**Tabel 4.**

Coefficients <sup>a</sup>						
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
	B	Std. Error	Beta			
(Constant)	-243.892.601.352.385	101.766.353.404.971		-2.397	,020	
JUMLAH_PENDUDUK	20.815.218	9.636.754	,473	2.160	,035	,144
JUMLAH_KENDARAAN_BERMOTOR	18.311.762	8.977.022	,524	2.040	,046	,104
KONSUMSI	-53.189.875	35.198.417	-,363	-1.511	,137	,119
INVESTASI	3.386.851	1.682.795	,223	2.013	,049	,1785
INFLASI	636.872.696.326	524.783.303.139	,113	1.214	,230	,796

a. Dependent Variable: PKB

The Table above indicated that alpha 5% at  $df = 54$  at  $t_{\text{table}} = 2.00488$ ; therefore, partially, the explanation of the influence of each independent variable on dependent variable (MVTR) was as follows:

1. The variable of Population had the value of  $t_{\text{count}} > t_{\text{table}}$  at  $2.160 > 2.00488$  at the significant level of  $0.035 < 0.05$  which indicated that there was positive and significant influence of the variable of Population on MVTR.
2. The variable of the Number of Motor Vehicles had the value of  $t_{\text{count}} > t_{\text{table}}$  at  $2.040 > 2.00488$  at the significant level of  $0.046 < 0.05$  which indicated that there was positive and significant influence of the variable of the number of Motor Vehicles on MVTR.
3. The variable of Consumption had the value of  $t_{\text{count}} > t_{\text{table}}$  at  $-1.511 > 2.00488$  at the significant level of  $0.137 > 0.05$  which indicated that there was no influence of the variable of Consumption on MVTR.
4. The variable of Investment had the value of  $t_{\text{count}} > t_{\text{table}}$  at  $2.013 > 2.00488$  at the significant level of  $0.049 < 0.05$  which indicated that there was positive and significant influence of the variable of Investment on MVTR.
5. The variable of Inflation had the value of  $t_{\text{count}} > t_{\text{table}}$  at  $-1.214 > 2.00488$  at the significant level of  $0.230 > 0.05$  which indicated that there was no influence of the variable of Inflation on MVTR.

Based on the Table above, it was also found that the equation was as follows:  

$$Y = -243.892.601.352,385 + 20.815,218X_1 + 18.311,762X_2 - 53.189,875X_3 + 3.386,851X_4 + 636.872.696,326X_5$$

From the equation above, it was found that the result of multiple linear regression coefficient could be explained as follows:

1. Constant ( $\alpha$ ).  
Constant value ( $\alpha$ ) = - 243.892.601.352.385 and was negative which indicated that if the value of independent variables (population, the number of motor vehicles, consumption, investment, and inflation) was 0 (zero), the value of the variable of MVT would decrease Rp. 243,892,601,352,385.
2. Regression Coefficient of the variable of Population ( $X_1$ )  
Regression coefficient value of the variable of Population ( $X_1$ ) = 20.815.218 and was positive toward MVT in North Sumatera which indicated that if the value of Population increased one person, MVTR in North Sumatera would increase Rp. 20,815,218 with the assumption that the other independent variables would remain the same. .
3. Regression coefficient of the variable of the Number of Motor Vehicle ( $X_2$ ).  
The value of regression coefficient of the variable of the Number of Motor Vehicles ( $X_2$ ) = 18.311.762 and was positive toward MVT in North Sumatera which indicated that if the value of the number of Motor Vehicles increased one unit, MVTR in North Sumatera would increase Rp. 18,311,762 with the assumption that the other independent variables would remain the same.
4. Regression coefficient of the variable of Consumption ( $X_3$ )  
The value of regression coefficient of the variable of Consumption ( $X_3$ ) = -53.189.875 and was negative toward MVT in North Sumatera which indicated that if the value of Consumption increased one point, MVTR in North Sumatera would decrease Rp. 53,189,875 with the assumption that the other independent variables would remain the same.
5. Regression coefficient of the variable of Investment ( $X_4$ )  
The value of regression coefficient of the variable of Investment ( $X_4$ ) = 3.386.851 and was positive toward MVT in North Sumatera which indicated that if the value of Investment increased one point, MVTR in North Sumatera would increase Rp. 3,386,851 with the assumption that the other independent variables would remain the same.
6. Regression coefficient of the variable of Inflation ( $X_5$ )  
The value of regression coefficient of the variable of Inflation ( $X_5$ ) = 636.872.696.326 and was positive toward MVT in North Sumatera which indicated that if the value of Inflation increased one point, MVTR in North Sumatera would increase Rp. 636,872,696,326 with the assumption that the other independent variables would remain the same.

#### 4. Residual Test

Residual test was used for moderating test in the multiple regression analysis. Moderating variable in this research was the variable of GRDP. The use of moderating variable was intended to prove that the variable of GRDP could moderate the correlation of the variables of population, the number of motor vehicles, consumption, investment, and inflation with the variable of MVT. The result of residual equation in this research could be seen in the following Table :

**Tabel 5.**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-861.706,004	272.015,578		-3,168	,003
JUMLAH_PENDUDUK	,051	,026	,255	1,972	,054
JUMLAH_KENDARAAN_BERMOTOR	,101	,024	,640	4,219	,000
KONSUMSI	,068	,094	,102	,723	,473
INVESTASI	-,006	,004	-,082	-1,250	,217
INFLASI	4.111,055	1.402,715	,161	2,931	,005

a. Dependent Variable: PDRB

From the Table above, multiple regression equation could be made between independent variables (population, the number of motor vehicles, consumption, investment, and inflation) and moderating variable, GRDP, as follows:

$$Z = - 861.706,004 + 0,051X_1 + 0,101X_2 + 0,068X_3 - 0,006X_4 + 4.111,055X_5$$

From this regression, residual value was obtained from moderating variable. This residual value was then transformed into an absolute form so that residual absolute value was obtained from moderating variable (ABS\_RESI). After that, the variable of MVT was regressed toward residual absolute value of the moderating variable (ABS\_RESI) in order to find out whether the variable of GRDP could be considered as moderating variable or not. A variable can be regarded as moderating variable when it has significant value < alpha value 5% (0.05) and has negative coefficient value. The result of the residual test could be seen in the following Table:

**Tabel 6.**

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-31.796,360	15.258,851		-2,084	,042
PKB	0,0000004264	,000	,401	3,338	,001

a. Dependent Variable: ABS\_RES1

From the Table above, it was found that the equation was as follows:

$$|\epsilon| = - 31.796,360 + 0,0000004264Y$$

From the result of the residual test above, it could be seen that the significance level of the variable of MVT was <  $\alpha$  or  $0.001 < 0.05$ ; however, regression coefficient value of the variable of MVT was 0.0000004264 (positive) so that it could be concluded that the variable of GRDP could not be considered as a moderating variable.

## IV. DISCUSSION

### The Influence of Population on MVTR

The result of the research, using t-test, showed that the variable of population had positive and significant influence on the variable of MVT which indicated that the more increasing the population, the more increasing the number of MVTRs. The result of this research was in accordance with the result of the researches done by Ariasih, Utama & Wirahthi (2011), Giovani & Padmono (2012), Dini (2014), and Hasnuri & Basuki (2014) which showed that the population had positive and significant influence on MVT.

However, it was contrary to the researches done by Yuskar & Yanti (2011) which revealed that population had negative and insignificant influence on MVT which indicated that the more increasing the population, the more decreasing the number of MVTRs. The same was true to the researches done Lobrian, Arisman & Fajriana (2014) which showed that population did not have any significant influence on MVT.

### The Influence of the Number of Motor Vehicles on MVTR

The result of the research, using t-test, showed that the variable of the number of motor vehicles had positive and significant influence on the variable of MVT which indicated that the more increasing the number of motor vehicles, the more increasing the number of

MVTRs. The result of this research was in accordance with the researches done by Ariasih, Utama & Wirahthi (2011), Yuskar & Yanti (2011), Giovani & Padmono (2012), Iswandi & Rustan (2013), Lobrian, Arisman & Fajriana (2014), Dini (2014), Hasnuri & Basuki (2014), Ratnasari, and Nempung & Suriadi (2016) which showed that the number of motor vehicles had positive and significant influence on MVT.

### **The Influence of Consumption on MVTR**

The result of the research, using t-test, showed that the variable of consumption did not have any influence on the variable of MVT which indicated that the increase or the decrease in consumption did not influence the increase and the decrease in the number of MVTRs. This was because the level of consumption comprised the consumption of food stuffs, non-food stuffs, and food in general. It could be concluded that when the level of consumption in North Sumatera Province increased, the increase was in food stuffs and food in general; it did not influence the number of motor vehicles so that it would not increase MVTR in North Sumatera Province.

### **The Influence of Investment on MVTR**

The result of the research, using t-test, showed that the variable of investment had positive and significant influence on the variable of MVT which indicated that the more increasing the investment, the more increasing the number of MVTRs. It could be concluded that the increase in investment in North Sumatera Province would automatically increase the level of investment in businesses, companies, or factories, and, of course, in motor vehicles which would eventually increase MVTR in North Sumatera Province.

### **The Influence of Inflation on Motor Vehicle Tax Revenue**

The result of the research, using t-test, showed that the variable of consumption did not have any influence on the variable of MVT which indicated that the increase or the decrease in consumption did not influence the increase and the decrease in the number of MVTRs. The result of this research was in accordance with the research done by Dini (2014) which revealed that inflation had insignificant influence on MVT. It could be concluded that when inflation increased in North Sumatera Province or the increase in price in general and continuously, it would not have any influence on the increase or the decrease in MVTR because people who already had motor vehicles would pay their MVT as the requirement for using their motor vehicles.

### **The Influence of GRDP as Moderating Variable on MVTR**

The result of moderating variable by using residual test showed that the significance level of the variable of MVT was  $< \alpha$  or  $0.001 < 0.05$  which indicated significant influence; however, the regression coefficient value of the variable of MVT was 0.0000004264 (positive) which indicated that GRDP was not moderating variable because, although the significance level was  $< \alpha$ , parameter coefficient was not negative. Therefore, it could not moderate the correlation of Population, the Number of Motor Vehicles, Consumption, Investment, and Inflation with MVTR. In other words, it would not strengthen or weaken MVTR.

The theory of the Central Bureau of Statistics states that GRDP based on market price was the amount of gross value-added which exists in all economic sectors in a certain area in which gross value-added is the decreased production value (output) which includes the components such as wage and salary, interest, land revenue, profit, and net indirect tax whereas MVT is one of direct taxes. Therefore, it could be concluded in this research that GRDP was not moderating variable on MVT.



## V. CONCLUSION AND SUGGESTION

1. The result of simultaneous test (F-test) showed that the variables of Population, the Number of Motor Vehicles, Consumption, Investment, and Inflation, had positive and significant influence on the variable of MVT in North Sumatera Province. The result of partial test (t-test) showed that the variables of Population, the Number of Motor Vehicles, and Investment had positive and significant influence on the variable of MVT in North Sumatera Province, while the variables of Consumption and Inflation did not.
2. The result of residual test showed that the variable of GRDP was not moderating variable which indicated that it could not strengthen or weaken the correlation of Population, the Number of Motor Vehicles, Consumption, Investment, and Inflation with MVTR. In other words, it would not strengthen or weaken MVTR in North Sumatera Province.

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